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Unilateral Sudden Dimution of Vision and Loss of Consciousness in HIV Patients, What Caused it?

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Abstract: ***A 29-year-old male diagnosed with AIDS came with dimution of vision in left eye since 1 month before admission and loss of consciousness. His visual acuity was hand movement with inaccurate projection of rays in left eye. The posterior segment revealed vitreous fluid is cloudy, flame shaped hemorrhage.Due to low CD4+ count, serological test result and electrolyte blood test, we considered a HIV-related opportunistic ocular infection, specifically CMV infection and hyponatremia. Co-infection with CMV occurs in 75-85% of the patients with HIV infection, of whom, more than a half develops CMV retinitis. We treated with acylovir for 3 weeks. There are limitations in the availability of anti-CMV agents in our hospitals. This patient's treatment was continued in the hope of preventing irreversible vision loss.***

Keywords: AIDS, cytomegalovirus, immunodeficiency, retinitis

1. Introduction

Infection with *cytomegalovirus* (CMV), an ubiquitous member of the herpesgroup of viruses, is very common among the general population. Serological studies indicate that previous exposure to CMV has occurred in a largeproportion of adults throughout the world, and although the rates vary depending on the population studied, up to 90% of middle-aged adults may have beenexposed. In most cases, CMV does not cause clinically apparent disease. CMVinfection of the eye, however, is seen in immunocompromised individuals such as patients with *acquired immune deficiency syndrome*(AIDS).[1]

CMVretinitisis an inflammation of the retina of the eye that can lead to blindness, it occurs predominantly in people whose immune system has been compromised, 15-40% of those with AIDS. Kuppermann and associates found that 30% of their patients with CD4 counts of less than 50 cells/µl had CMV retinitis.[2]Although CMV retinitis may occasionally be seen in a patient with a CD4 count in excess of 200cells/µl.[1]Diagnosis of CMV retinitis in the setting of human immunodeficiency virus (HIV)/AIDS is essentially clinical, pizzapieretinopaty, confluent retinal necrosis and sharp edge of lesion with hemorrhages.[3] *Polymerase chain reaction* (PCR)-based analysis of the aqueous or vitreous samples may provide critical diagnostic information of high sensitivity and specificity that allow the clinician to differentiate CMV from other herpetic causes of necrotizing retinitis and from toxoplasmicretinochoroiditis in immunocompromised patients with atypical lesions.[4]In this case report, we don't demonstrated do PCR examinations and provide therapy to patients based on premutive diagnosis.

2. Case Report

A 29 years old male patient came to emergency room with the chief complaints of loss of consciousness due to hyponatremia. He was founds to be AIDSpositif 1 years back. Patient has not taken any treatment. After he got correction of hyponatremia, the patient is well conscious. Patient also complaints of sudden diminution of vision in the left eye since 1 month back with floaters and flashes of light, with fever in previous 2 months, generalized weekness, anoreksia, vomiting perfuse. Patient did not get any treatment for his eye before. Three months ago the patient was treated for a lung infection at Dharma Yadnya hospital. There was no history of spectacles usage, hypertension, and diabetes mellitus.

One examination showed visual acuity was hand movement with inaccurate projection of rays in left eye, while in right eyewas 6/6. Left eye pupil show anterior segment normal, vitreous fluid is cloudy, flame shaped hemorrhage. Anterior segment and fundus of right eye were found normal. We assessed this patient with specific opportunistic infection with several differential diagnosis including CMV, herpes simplex virus (HSV), toxoplasmosis retinochorioditis, ensepalitis toxoplasmosis.

Electrolyte blood slow reducted of sodium is 144 mmol/L, chloride is 75 mmol/L, but potassium raised to 5,4mmol/L. After correction the sodium raised to 127mmol/L, potassium reducted to 4,5mmol/L and chloride to 85mmol/L. We also tested antibodies against opportunistic infections suspected to be the cause of patient complaints, including CMV antibodies and toxoplasmosis, the result for IgG toxoplasmosis is non reative, IgM CMV is non reative and IgGtoxoplasosis is reative.

Treatment given was oral acyclovir 400 mg 4 times a day. Based on the literature, the therapies given for CMV retinitis are gansilovir, foscaret, and valganciclovir. We do not provide the above therapy because of the unavailability of drugs. We have given 3% of sodium solution for correction hyponatremia. Onfollow up day 3, the patient become consciousness.

3. Discussion

Opportunistic infections (OIs), which have been defined as infections that are more frequent or more severe because of immunosuppression in HIV-infected persons. It is important to recognize that the relationship between OIs and HIV

infection is bidirectional. Human immunodeficiency virus can cause systemic or organ diseases. Several systemic OIs include *Mycobacterium tuberculosis* infection, *Cryptococcus* infection, cytomegalovirus disease, toxoplasmosis infection. Iqbal stated an association between CD4+ cells count with ocular complication ofHIV with the commonest infection is CMV. Cullen et al stated that neuro-ophthalmic manifestations of HIV tend to present at an advanced stage of the disease when CD4 cell counts are depleted below 200 cells/µl. In HIV-infected patients, opportunistic infections such as cytomegalovirus, toxoplasmosis, syphilis, and tuberculosis are by far the most common causes of optic nerve disorders.[5-7]

In our cases, we found that patient was complaining sudden dimution vision of his left eye, diagnosed as AIDS since 1 years back before came to this hospital (Mey, 2020) with initial symptoms were loss of consciousness due to hyponatremia and initial CD4+ count at first visit was 134 cells/mL (n: 410- 1,590 cells/mL). Initial presentation showed was hand movement with inaccurate projection of rays in left eye, while in right eye was 6/6. Left eye pupil show anterior segment normal, vitreous fluid is cloudy, flame shaped hemorrhage. From this condition, our primary consideration was opportunistic infection with differential diagnosis caused by CMV, HSV, Cryptococcus, Toxoplasma, and syphilis. The laboratory examination testing show positive tendency to CMV infection. Untreated CMV retinitis can result in a variety of clinical appearances. Invasion of the retinal cells by the virus causes a full-thickness retinal necrosis, and this appears as multiple granular-appearing white dots with varying amounts of intraretinal haemorrhage.[3]

The Centers for Disease Control and Prevention (CDC), the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America give recommendation for treating CMV retinitis. For sight threatening lesions which is adjacent to the optic nerve or fovea, the recommended initial therapy comprised intravitreal injections of ganciclovir (2 mg/injection) or foscarnet (2.4 mg/injection) for 1–4 doses over a period of 7–10 days to provide higher intraocular levels of drug and faster control of the infection until steady state intraocular ganciclovir concentrations are achieved. This initial therapy might be accompanied by valganciclovir 900 mg twice daily for two until three weeks then followed by once daily doses.[3] In our case, he given a systemic ancyclovir 400 mg four times a day in three weeks, to control the presumably active CMV infection and to prevent the CMV involvement to the contralateral eye and also to improve patient's systemic condition.[5,6]

Another complaint that is also present in the patient is a decrease in consciousness. In this case, the cause of decrease in consciousness was low sodium levels. Gradual decrease in sodium usually results in minimal symptoms, whereas rapid decrease can result in severe symptoms. Polydipsia, muscle cramps, headaches, falls, confusion, altered mental status, obtundation, coma and status epilepticus may indicate the need for acute intervention. Overt neurologic symptoms are most often due to very low-serum sodium levels (usually <115 mEq/L), in this case the patient has 114 mmol/L serum sodium levels. Hyponatremia is the most common electrolyte disorder in clinical practice, and extant evidence indicates that severe hyponatremia is associated with increased morbidity and mortality in HIV/AIDS patients.[8 ,9] There are several conditions in patients with HIV/AIDS that may predispose them to development of hyponatremia: opportunistic infection, diarea and vomiting. Infection of pulmonary tract and central nervous system (CNS such as: tuberculosis, meningistis, ensephaitis and abcess) can induce the relaase of axcess ADH, which is know as the SIADH and cerebral salt washting syndrome (CSWS).[8,9]

SIADH involves the physiologically inappropriate secretion of ADH, or increased renal sensitivity to ADH, leading to renal conservation of water and euvolemic or hypervolemichyponatremia. In this case the patient had been treated for pulmonary infection and in the past two months the patient had fever and vomiting perfuse, this was the cause of hyponatremia in the patient.[9] Hyponatremia due to SIADH is also a frequent complication of pulmonary infections. However, the underlying mechanisms are uncertain. It has been proposed that a reduction in pulmonary venous return leads to the activation of volume receptors and, consequently, to increased ADH secretion.HIV has a direct "virotoxic" effect on enterocytes in the early stages of infection. HIV infection directly causes dramatic damage to the gastrointestinal tract (GIT) that includes substantial disruption of gut microbiota composition with an increased prevalence of pathogenic microbes and a reduced prevalence of less-aggressive indigenous organisms, massive loss of gut-residing $CD4^+$ T cells and downregulation of GIT gene expression.[8,9]

4. Conclusion

Based on the case explained above, we concluded sudden diminution of vision and decreased consciousness in HIV patients have many causes, because there are many opportunistic infections that can infect patients. In this case the cause was CMV infection and hyponatremia. The screening recommendations for patients with AIDS and low CD4+ T-cell counts should be performed routinely. Proper diagnosis and management can be made and done early to prevent irreversible vision loss.

5. Declarations

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